NOVEMBER/DECEMBER 2025

# FCS21 — C++ AND DATA STRUCTURE

Time : Three hours Maximum : 75 marks

Shanmuga Industries Arts & Science College
T.V.Malai

SECTION A — (10 × 2 = 20 marks)

Answer ALL questions.

1. List the characteristics of procedure oriented programming.
2. Write the rules followed for naming identifiers.
3. What are the steps involved in operator overloading?
4. What is an abstract class?
5. Define data structure.
6. Define stack.
7. What is recursive call?
8. Which is called ancestor node?

9. Write the algorithm for linear search.

10. What is hashing?

SECTION B — (5 × 5 = 25 marks)

Answer ALL questions.

11. (a) How do you create symbolic constants in C++? Explain.

Or

(b) Write a C++ program to find Area of square, rectangle, circle and triangle using Function Overloading.

12. (a) Explain the three cases of class type conversion for uncompatible types.

Or

(b) Discuss the functions used for the manipulation of file pointers.

13. (a) Explain one-dimensional arrays with its low-level implementation.

Or

(b) Explain the Queue operations using pointers.



Shanmuga Industries Arts & Science College T.V.Malai

14. (a) How do you verify a recursive function? Explain.

Or

(b) Develop algorithms for the binary search tree operations insert element and deleting an element.

15. (a) Consider the following data set {5, 8, 1, 4, 2, 9, 7, 3}. Develop an algorithm to sort the given numbers using bubble sort method.

Or

(b) Explain the implications of linear probing.

SECTION C — (3 × 10 = 30 marks)

Answer any THREE questions.

16. Summarize the most commonly used math library functions.

17. Explain the unformatted I/O operations in C++.

18. Demonstrate the well-formed expressions using stack.

19. Explain the depth first search graph algorithm.

20. Explain the algorithm for merge sort.

———————